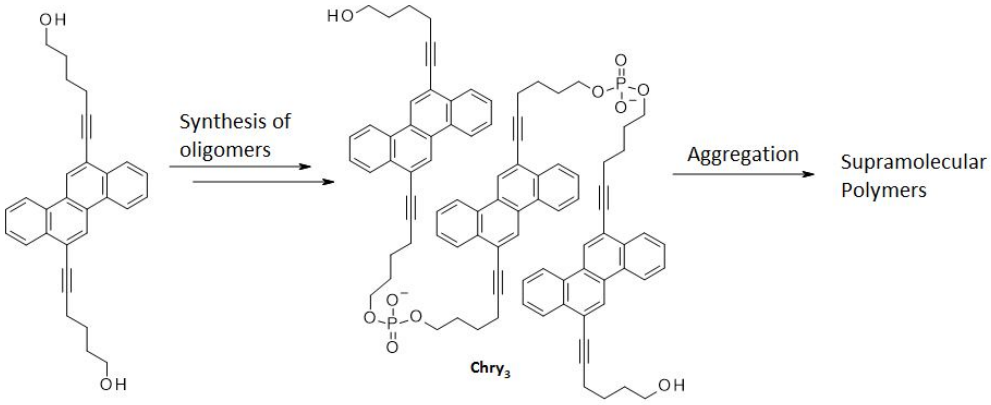
Formation of supramolecular polymers by chrysene oligomers

Caroline Bösch[1], Robert Häner[1] *

[1]University of Berne

Supramolecular assembly of π-conjugated systems is of large interested due to the possibility to use them in electronic devices.[1] Chrysene is a polyaromatic hydrocarbon which has been studied e.g for organic light-emitting diodes (OLEDs).[2] In continuation of our previous work involving the supramolecular polymerisation of pyrene oligomers [3] an oligomer consisting of three chrysenes linked by phophodiesters was synthesised ($Chry_3$).

UV-Vis measurements show that aggregates of $Chry_3$ are formed in aqueous medium. This is illustrated by general hypochromicity, a change in vibronic band intensities and, in particular, the appearance of a red-shifted absorption band in the $S_0 \rightarrow S_2$ transition. The data suggest the formation of J-aggregates. The formation of supramolecular polymers is further studied by temperature-dependent absorption- and fluorescence measurements, and by atomic force microscopy (AFM). Results will be shown.



[1] F. J. M. Hoeben, P. Jonkheijm, E. W. Meijer, A. P. H. J. Schenning, *Chem. Rev.*, **2005**, 105, 1491 – 1546.
[2] A. S. Ionkin, W. J. Marshall, B. M. Fish, L. M. Bryman, Y. Wang, *Chem. Commun.*, **2008**, 2319 – 2321.
[3] M. Vyborni, A. V. Rudnev, S. M. Langenegger, T. Wandlowski, G. Calzaferri, R. Häner, *Angew. Chem. Int. Ed.*, **2013**, 52, 11488 – 11493.